第36回文化財の保存および修復に関する国際研究集会

文化財の微生物劣化とその対策

屋外・屋内環境、および被災文化財の微生物劣化とその調査・対策に関する最近のトピック

日時：2012 年 12 月 5 日（水）～ 12 月 7 日（金）
場所：東京国立博物館　平成館　大講堂
主催：東京文化財研究所




International Symposium on the Conservation and Restoration of Cultural Property 2012

Microbial Biodeterioration of Cultural Property

Recent Topics on the Investigation of and Countermeasures for Biodeterioration of Outdoor / Indoor Properties and Disaster-affected Objects

Dates: December 5 (Wed.) – 7 (Fri.), 2012
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Biotechnologies for identification of microorganisms colonizing aerosol and surfaces of works of art in indoor environments

Biological deterioration of organic and inorganic objects is a complex process involving a relevant number of microbial species. Particularly, fungi and bacteria, wide spread in biosphere environments, are the main microorganisms related to the biodeterioration of cultural property. Moreover, complex microbial communities can release, in indoor environments, metabolic products or other airborne particles that may be detrimental for human health. In order to identify the components of microbial populations colonizing surfaces of works of art and/or dispersed in the aerosol of confined/semi-confined environments, a molecular approach was taken. Samples were collected by non-destructive techniques (sterile swab, nylon membrane fragments) from surfaces of works of art and by Sartorius portable sampler (MD 8, equipped with gelatin sterile filters) from bioaerosol. Microbial particles were directly collected from the nylon or gelatin filters and genomic microbial DNA extracted. In order to genotype the largest number of bacteria and fungi, PCR and oligonucleotide microarray protocols were used. The target sequences, specific for prokaryotic or eukaryotic cells, were 16S rRNA, internal transcribed spacer (ITS) and beta-tubulin gene. The goal was to set up and improve DNA-based protocols in order to identify works of art deteriogens and aerosol colonizing microorganisms, with potential negative impact on human health (workers/visitors) in indoor environments.

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